Network Access to the Titan System

June 2004

National Institutes of Health
Center for Information Technology
NIH Computer Center
12 South Drive MSC 5607
Bethesda, Maryland 20892-5607

Publication No. CIT223

TABLE OF CONTENTS

1 INTRODUCTION

This manual describes network access to Titan, the mainframe system at the NIH Computer Center, which is managed by the Center for Information Technology (CIT). For more information on the NIH Computer Center, including links to other services, go to:

http://datacenter.cit.nih.gov

This manual does not replace the documentation that accompanies a user's TCP/IP software, but rather serves as a supplement to that documentation.

1.1 ASSISTANCE

CIT offers several types of assistance for Titan users:

- Telephone Help

  Call 301-594-6248 for the CIT Technical Assistance and Support Center (TASC) help desk.

- E-mail Help

  Send e-mail to tasc@nih.gov

- Online Help

  Request assistance through a Web-based CIT Service Request at:

  http://support.cit.nih.gov

Documentation

All registered users can order, print, and view manuals relating to Titan, such as the *Titan User's Guide*, *Titan Batch Processing*, and *Interface*, through the Web. Go to:

http://publications.cit.nih.gov

Contact the TASC help desk if you require assistance ordering manuals.

Other Online Resources

Between updates to this manual, you can receive information concerning changes that will affect Titan through CIT's online resources including:

- *Titan News*, an online mail facility. Join the NIH Listserv list "CIT-Titan-News" at:

  http://list.nih.gov/archives/cit-titan-news.html

- *Interface*, a Web-based periodical. To subscribe to *Interface Online* via Listserv or to view an issue, go to:

  http://datacenter.cit.nih.gov/interface

- CIT Web pages at:

  http://cit.nih.gov

Training Program
The CIT Computer Training Program provided by the Center for Information Technology offers a wide variety of courses that enable users to make efficient and effective use of computing, networking, and information systems in their work at NIH. For more information go to:

http://training.cit.nih.gov

1.2 THE FORMAT OF THIS MANUAL

The manual is divided into five sections. This section plus Section 2 explain the fundamentals for setting up your network software and connecting. Section 3 describes FTP and Section 4 discusses TN3270 access to Titan. There is a short description of data set conventions for Titan in Section 5. To round out the manual, the Appendices (Section 6) contain other useful information, including a glossary.

Examples are shown using two styles in this manual:

This is an example of text the computer will display on screen.

This is an example of text you are expected to type.

Additionally, words surrounded by "<" and ">" should be entered using a specific value. For example, if the word <date> appears in an example you should type a date such as "09/17/02" not the word "date".

1.3 GENERAL TERMS

Host defines any computer connected to a network. **Client**, as used in this manual, refers to the software running on your local machine. The **server** is the software running on the mainframe (Titan). Your client will ask our server to perform certain tasks at the necessary time. The machines communicate using a protocol, which dictates what form the data between them takes. This occurs automatically, without any intervention by you.

This manual describes how to initiate certain connections to Titan. Connections to other facilities are beyond the scope of this document.

2 GETTING STARTED

This chapter will provide you with a few pointers on the hardware and software required to gain network access.

2.1 TCP/IP CLIENT SOFTWARE

In order to access Titan TCP/IP services from a workstation with access to NIHnet (whether via a LAN connection, dialup connection or broadband connection such as DSL or cable modem), it is necessary to install a compatible communications software package on the workstation itself. High-speed file transfer, remote job submission, and 3270 (full-screen) terminal connections are some of the powerful capabilities currently available using this protocol. Windows 9x/NT/2000/XP include TCP/IP driver software. CIT supplied Windows-based client products for Windows 9x/NT/2000/XP are referred to later in this manual.

See Section 2.1.4 for information on Macintosh connectivity. Contact the TASC help desk for additional recommendations on client products for TCP/IP services.

2.1.1 WS_FTP Pro

WS_FTP Pro, based on the file transfer protocol (FTP), provides fast and accurate transfer of files or collections of files between Internet-connected computers using Windows 9x/NT/2000/XP.

For security reasons, we recommend that you don't allow WS_FTP Pro to encrypt and store your password in its .ini file.

This software and installation instructions can be downloaded from the Web. Go to:

http://titan.nih.gov

and click on NIH Connectivity Tools. Before being allowed to download the software you will be prompted to enter your Titan USERid and RACF password.

WS_FTP Pro includes a help menu with online documentation. If you need additional assistance, contact the TASC help desk.

2.1.2 QWS3270 PLUS for TN3270 Connections

The NIH Computer Center has a site license for QWS3270 PLUS, the commercial version of QWS3270, which provides 3270 (full-screen) terminal emulation for PCs. QWS3270 PLUS is fully compatible with Titan. This 3270 client software for network connections is available without charge. Titan users can download QWS3270 PLUS from the Web by pointing their browser to:

http://titan.nih.gov

and clicking on NIH Connectivity Tools. Before being allowed to download the software you will be prompted for your Titan USERid and RACF password. Contact the TASC help desk for additional information.

The software includes instructions on how to set up additional 3270 sessions.
Note for IMS users: The "Port" must be set to 2325 for a direct unencrypted connection to IMS.

2.1.3 QWS3270 Secure for TN3270 Connections

CIT provides QWS3270 Secure, a 3270 (full-screen) terminal emulation package that supports Secure Sockets Layer (SSL). QWS3270 Secure allows PCs to connect to SSL-enabled IBM mainframes over a secure TCP/IP connection that is fully compatible with Titan.

QWS3270 Secure, which runs on 32-bit Windows (Windows 9x, or Windows NT/2000/XP), is available without charge. Titan users can download QWS3270 Secure from the Web by pointing their browsers to:

http://titan.nih.gov

and selecting NIH Connectivity Tools.

Because of the special secure port considerations, be sure to print and read the installation and configuration instructions before you install this product. QWS3270 Secure instructions also contain separate configuration directions for IMS/ADB users to allow them to connect directly to IMS. Contact the TASC help desk if you need assistance.

Note for IMS users: The "Port" must be set to 2324 for a direct encrypted connection to IMS.

2.1.4 TCP/IP Connectivity for the Macintosh

In order to use a networking application, such as TN3270 or TN3270X, the Mac operating system must have the necessary complement of network components. Contact the TASC help desk for additional information.

A unique IP (Internet) address (number) is needed to configure Open Transport on each individual Macintosh on the network that will be using various protocols. A user can generally acquire the unique IP number by selecting "DHCP Server" in their network setup. An invalid or non-unique IP number can cause problems for the user and for other workstations on the network.

TN3270 or TN 3270X for the Macintosh
TN3270 or TN3270X allows a Macintosh user, on a LAN connected to NIHnet, to access full-screen services, such as TSO, DB2, and ISPF. This software is available from PUBnet, the collection of network services available through NIHnet. PUBnet, which is maintained by CIT, is available through the Web at:

http://pubnet.nih.gov

Go to Macintosh Information & Software for applicable programs. For further information, contact the TASC help desk.

2.2 HOST NAMES

In order to connect to a remote computer or host across the network, you need to tell your software its destination. Just as if you were going to travel across town, you need the street address of where you want to end up. The "place to go" is identified using its Internet address. An Internet protocol (IP) address is a string of numbers separated by periods, e.g., "128.231.64.7."

While knowing the IP address of the remote computer will allow you to connect, it is easy to see that such numbers can be cumbersome to remember. For this reason many clients have the ability to work with Internet host names rather than IP addresses. The NIH facilities can be accessed using Internet host names. Using the previous example, instead of telling your friend you are going to 15634 Maple Drive, you would say, "I'm going to Harry's place." Another good reason to use the name is that Harry may move. His address will change, but it will still be known as Harry's place.

In order to use Internet host names you need to first provide your system with the address of the name server. This special remote computer is like a big "Yellow Pages" for the network, which looks up the name and returns the address. This look up is how your computer knows where to go.

The Internet host names used by Titan are listed below:

Online Services Directory

Service	**Internet Host Name**
Full-Screen 3270	**TN3270.TITAN.NIH.GOV**
FTP File Transfer	**FTP.TITAN.NIH.GOV**

You should note that the spelling is not case sensitive. Upper or lowercase characters can be mixed in any way.

In order to properly use these names you must tell the client the name server's address. (See Appendix B for a list of NIH name server addresses.)

3 FTP FOR TRANSFERRING FILES

FTP stands for File Transfer Protocol. It is used for transferring files from one machine to another over the network.

In every FTP connection, there are two roles being played, that of the client machine and that of the server machine. The client machine is the local system that is initiating the connection; the server machine is the remote host that is receiving the connection.

To start a file transfer between your PC and Titan, connect to host name ftp.titan.nih.gov using FTP client software, such as WS_FTP Pro (supplied by CIT) or the FTP command that comes with Windows or Unix. After making the connection, you can transfer files both to and from the remote host (i.e., Titan).

When logging on to Titan, you will first see a prompt requesting your USERid. Enter your registered USERid. The next prompt is for your RACF password. For most FTP clients, your password will not appear as you type. This is a security measure to protect your password. If for some reason the logon fails, as when you make a mistake typing your password, simply select Connect again. If you are using the FTP command, type *user* and press ENTER. The computer will then prompt you for the above information again. See Example 1 in Section 3.6.

WS_FTP Pro

To start using WS_FTP Pro, double-click your mouse pointer on the FTP application icon and select Titan from the list of configured sites. If Titan is not listed, you will have to configure it as a new site and select New. To change the properties of a site listed (e.g., site name, Internet address, userid), select Properties.

The WS_FTP Pro software saves the logon information for you, so you need only enter it once, after which, you choose which connection to make from a list box.

3.1 COMMON FTP COMMANDS

There are many FTP commands, but they will vary depending upon which TCP/IP software you are using. The examples in this manual are for the version of ftp that comes with Windows. If you have a different package, refer to that package's documentation for specific examples.

WS_FTP Pro

To access the FTP commands in WS_FTP Pro, make the connection to Titan. In the Remote system white area, right click the mouse button. A drop-down menu will offer Operations as an option. Click on Operations, then select FTP Commands. Select the command you want. **Note:** some of the most common functions, such as rename and delete, appear as buttons on the Remote Site menu bar and the Local System menu bar.

You should be aware that any abilities you see demonstrated here are probably duplicated in other packages.

3.1.1 Client Commands

Note: even though the commands are given below in upper case, they are not case sensitive.

CD	change the working remote directory
PWD	display the current working directory
HELP	obtain information about client commands
QUOTE	send special, server specific commands
LS or DIR	display a list of remote file names
GET	transfer a file from the remote site to the local site by typing in file name
PUT	Transfer a file from the local site to the remote site by typing in file name
ASCII	switch to ASCII mode
BINARY or IMAGE	switch to binary (image) mode
LCD	change the local working directory
MGET (filenames)	copy multiple files from the remote computer to yours
MPUT (filenames)	put multiple files onto the remote machine
CLOSE, EXIT, BYE, LOGOFF, or QUIT	close any connections that are currently open and exit ftp
RENAME	rename a file on the ftp server (see Section 3.1.2 if your client does not have a RENAME command)
DELETE	delete a file on the ftp server (see Section 3.1.2 if your client does not have a DELETE command)

3.1.2 Server Specific Commands

The following commands are sent following a QUOTE command.

HELP	Use this command to get help for server commands (note that the HELP command, not preceded by QUOTE, gives information about client FTP commands).
SITE	This command allows you to specify parameters for creating a data set on Titan. WS_FTP Pro prefixes your entry with the word SITE and sends your entry to Titan without any editing.
SYST	This command displays the type of operating system at the FTP server.
RNFR, RNTO	If your client does not have a RENAME command you can use these two commands in sequence to rename a data set. The sequence is: RNFR <oldname> RNTO <newname>
DELE	If your ftp client does not have a DELETE command, you can use the server DELE command to delete a file on the server.

3.2 TRANSFERRING FILES

This section describes how to download files from Titan to your desktop computer and how to upload files from your desktop computer to Titan.

3.2.1 DIR Command

Once you make the connection to Titan using FTP, you will be placed in a directory defined by your USERid. All modifications, uploads and downloads occur within this directory by default.

The first step is often to view the contents of the directory (catalog). To do this, issue the DIR command. See Example 6, Example 7, and Example 8 in Section 3.6.

WS_FTP Pro

If connecting using WS_FTP Pro, the client automatically retrieves a listing of the files on the server. The list appears in the Remote Site window.

3.2.2 GET Command

Once you know the names of the files, you may issue the GET command to retrieve a file stored on the remote host. The file will be copied onto your local drive.

To transfer the file test1 and rename it "testmine" in the default directory on the local site:

ftp> *get test1 testmine*

.**Note:** Files (data sets) that are to be downloaded via FTP from the NIH Computer Center should be stored on Titan in non-edit format. Data sets that are stored in WYLBUR's edit format will not be automatically converted to ASCII text files when downloaded via FTP to a desktop computer or workstation via the GET command. Use the WYLBUR SAVE (or RESAVE) command with the VARIABLE option to specify non-edit format rather than the default (edit format). For example:

```
save as myfile variable
```

Notice that the prefix "USERID." was not specified. This is because the logon USERid is used as the prefix whenever an action is taken. See Section 3.5 to learn how to access files associated with a USERid that is different from your logon USERid.

WS_FTP Pro
In WS_FTP Pro, you can select a remote site file by clicking on it and then clicking on the arrow button pointing to the local site directory. This will place a copy of the file on the local system. To change the current directory of the local site, use the arrow key located at the top of the list of local site files. Another way of moving (copying) a file to the local system is by dragging the file name from the remote site list of files to the list of local system files.

3.2.3 PUT Command

The counterpart to the GET command is PUT. This command allows you to upload files to Titan. To transfer a file named "test" from your local default directory to Titan as a file named "testmine," type the command:

put test testmine

Although most transfers involve text files, files containing data in a non-text form can be transferred using FTP. You must issue the IMAGE or BINARY command before transferring the file. This will stay in effect until you change back to text transfer mode using the ASCII command.

WS_FTP Pro
If you are using WS_FTP Pro, click on the Binary button before transferring a binary file. **Note:** binary files are generally useless except on the same computer type on which they were created. In other words, a binary file created on a Windows-based computer will probably not be useful on a Macintosh.

3.2.4 Renaming a Data Set

To rename a Titan data set, use the ftp RENAME command. The syntax is:

Rename <oldname> <newname>

If you wish to rename a member of a PDS, make the PDS your working directory and then use the RENAME command. See Example 6 in Section 3.6.

WS_FTP Pro

The WS_FTP Pro client automates renaming a data set. Simply click on a file in the Remote Site window. Hit the Rename button and enter the new name in the space provided.

3.3 TITAN FTP SERVER SPECIFIC COMMANDS

FTP software allows you to send commands directly to the server machine (in this case Titan). However, when you wish to issue server specific commands from your FTP session, you must precede these commands by the QUOTE command. This passes the server commands directly to Titan, which then acts upon them. Otherwise, your commands will be interpreted by the local client package.

WS_FTP Pro
To issue the QUOTE command using WS_FTP Pro, right click in the white area of the WS_FTP Pro window for the menu. Select Operations, then FTP commands, and then QUOTE. WS_FTP Pro sends it to the FTP site, unedited. It is up to you to determine the command syntax depending on the host FTP site. You should not send any commands that need to open a secondary channel.

3.3.1 HELP Command

The QUOTE HELP command is used to request assistance from Titan. The syntax is

QUOTE HELP

3.3.2 SITE Command and Sub-parameters (advanced file handling)

The SITE command establishes parameters to be used in storing the next file that you send to Titan. It allows you to specify DCB information (LRECL, BLKSIZE, RECFM), the amount of disk space required for the file, and many other important parameters. It is like being able to build a JCL DD statement for the data set before you transfer it.

The format of the SITE command is as follows:

QUOTE SITE <parameter>=<option>...

where
QUOTE specifies that site-specific commands follow

SITE sends command to remote machine

The default attributes for uploaded files are:

PRIMARY=30
SECONDARY=15
TRACKS
DIR=27 for a partitioned data set
LRECL=256
BLKSIZE=6233
RECFM=VB

NOTE: Be sure to issue the appropriate SITE commands BEFORE sending the file to the remote host. Multiple parameters may be specified in a single SITE command. If a SITE command is too long to fit on one line, use multiple SITE commands to specify extra parameters.

WS_FTP Pro
To issue SITE commands using WS_FTP Pro, right click in the white area of the WS_FTP Pro window for the menu. Select Operations, then FTP commands, and then SITE. Enter a remote site-specific command in the box. WS_FTP Pro prefixes your entry with the word SITE and sends your entry to the FTP site without any editing. Be sure that you are using commands that are valid for this site.

Use the QUOTE STAT command to obtain the current values for the SITE command.

See Appendix A for a list of parameters for the SITE command.

3.4 USING PREFIXES

Titan's file system does not use directories per se. However, you may still group files together by using prefixes to give the appearance of a directory.

A prefix is simply any part of the file name (up to the entire name). When specifying the name, you must include the entire segment of the name, e.g., for a file named

QUIGLEY.DOWN.UNDER

you may specify a prefix of

QUIGLEY or QUIGLEY.DOWN

You may not, however, specify

QUIG

as the segment "QUIGLEY" cannot be split.

Once the current prefix becomes QUIGLEY.DOWN (the first two qualifiers of the data set name), you could then specify a prefix of UNDER (the third qualifier of the data set). Then the new prefix (or directory) would be QUIGLEY.DOWN.UNDER.

In order to change the prefix, use the CD command. For information on using prefixes to access data sets that belong to another USERid on Titan, see Section 3.5.

If you are logged on to the FTP server with the Titan USERid USERID, the command CD STATUS would make your current prefix USERID.STATUS. If you then give the command CD MARY, the subsequent DIR command will display data sets beginning with the prefix

USERID.STATUS.MARY. To view your current working directory, use the PWD command. **Error! Reference source not found.** in Section 3.6 demonstrates changing the prefix and seeing the list of data sets within the directory (the new prefix).

WS_FTP Pro
When using WS_FTP Pro, select

ChgDir

from the Remote Site menu bar. An Input box will appear. Type the name of the remote folder using the desired prefix. For example, if the USERid **'USERID.'** appears in the box and you want to change the directory toUSERID.manual, click on Chg Dir button for the remote site and type *manual* in the box that appears. If you have already switched directories, you can return to the top level directory by typing '*userid'* (with quotes) in the Chg Dir box.

The current directory, set with the CD command, affects where uploaded files are stored, as well as where files to be downloaded are located.

3.5 ACCESSING ANOTHER USERID'S DATA SETS

When you initiate an FTP session, the prefix is automatically set to the USERid with which you logged on. A user logged on with USERid USERID2, will default to a prefix of USERID2.

You can change the prefix during the course of an FTP session. To change the prefix to another USERid, put the prefix in quotes. For example, the command

cd 'USERID1'

will make USERID1 the current prefix rather than your logon USERid (USERID2).

If you use the CD command without putting the prefix in quotes, the prefix you specify will be added to your current prefix rather than replacing it. For example, if your current prefix is USERID2 and you issue the command

cd $KKK

your prefix will become USERID2.$KKK.

But if you use the command

cd '$KKK'

your prefix will become $KKK (a different USERid)

When attempting to alter [upload] files under a different USERid, you must have the appropriate RACF authority.

WS_FTP Pro

If you are using WS_FTP Pro, select the ChgDir button for the remote host. Replace the USERid that appears in the window with the new USERid. Be sure to type the new USERid between the quotes. This becomes the new prefix (directory).

3.6 EXAMPLES

Example 1: Establishing a FTP session and changing the prefix:

C:\ My Documents\Select>*ftp ftp.titan.nih.gov*
Connected to titan.nih.gov.
220-FTPD1 IBM FTP CS V2R10 at titan.nih.gov, 19:27:06 on 2004-05-05.
220 Connection will close if idle for more than 1440 minutes.
User (titan.nih.gov:(none)): *userid1*
331 Send password please.
Password:
230 USERID1 is logged on. Working directory is "USERID1.".
ftp> *cd userid2* < ------ No quotes around prefix
250 "USERID1.USERID2." is the working directory name prefix.
ftp> *cd 'userid2'* < ------- Quotes around prefix
250 "USERID2." is the working directory name prefix.
ftp> *quit*

Example 2: Uploading and downloading a file:

H:\Temp>*ftp ftp.titan.nih.gov*
Connected to titan.nih.gov.
220-FTPD1 IBM FTP CS V2R8 at titan.nih.gov, 15:49:18 on 2003-09-13.
220 Connection will close if idle for more than 1440 minutes.
User (titan.nih.gov:(none)): *userid*
331 Send password please.
Password:
230 USERID is logged on. Working directory is "USERID.".
ftp> *put pcput.txt putdemo.txt*
200 Port request OK.
125 Storing data set USERID.PUTDEMO.TXT
250 Transfer completed successfully.
ftp: 677 bytes sent in 0.01Seconds 45.13Kbytes/sec.
ftp> *get putdemo.txt getdemo.txt*
200 Port request OK.
125 Sending data set USERID.PUTDEMO.TXT
250 Transfer completed successfully.
ftp: 677 bytes received in 0.03Seconds 21.16Kbytes/sec.
ftp>

Example 3: Use of SITE command:

To upload the next file as an FB, LRECL=80 data set with 3 cylinders primary space and 1 cylinder secondary space, use a command such as the following:

Quote site recfm=fb lrecl=80 blksize=8000 primary=3 secondary=1 cylinders

Example 4: To submit a job

Quote site filetype=jes
Put <local filename>

A job will be submitted and will be run under the USERid you used to establish the ftp session.

Note: If you wish to check on the status of your job or retrieve its output to your computer, the job name should consist of your USERid followed by a single letter or digit. To find the status of jobs, use the DIR command while in JES mode. To fetch a job, use the command:

Get <jobid>.x <pc_filename>

where jobid is JOB followed by the 5-digit job number as indicated by the output of the DIR command.

'JOB' can be abbreviated 'J'.

PC_FILENAME is the name of the file on your computer into which you wish the output to be stored.

The 'x' can be either lowercase or uppercase.

For example, the command

get J00001.x myjob.out

would put the output of JOB00001 into the workstation file myjob.out. To resume regular file transfers, issue the command *quote site filetype=seq.*

ftp> *quote site filetype=jes*
200 SITE command was accepted
ftp> *put h:\temp\ttnjob.txt*
200 Port request OK.
125 Sending Job to JES internal reader FIXrecfm 80
250-It is known to JES as JOB08348
250 Transfer completed successfully.
ftp: 464bytes sent in 0.00Seconds 464000.00Kbytes/sec.
ftp> *dir*
200 Port request OK.

125 List started OK
jobname JOB08348 OUTPUT 4 Spool Files
250 List completed successfully.
ftp: 74 bytes received in 0.06Seconds 1.17Kbytes/sec.
ftp> get j08348.x h:\temp\ttnout.txt
200 Port request OK.
125 Sending all spool files for requested Jobid
250 Transfer completed successfully.
ftp: 12587 bytes received in 0.19Seconds 66.95Kbytes/sec.
ftp> *quote site filetype=seq*
200 SITE command was accepted

Example 5: **Renaming a sequential data set:**

ftp> *rename putdemo.txt putdemo2.txt*
350 RNFR accepted. Please supply new name for RNTO.
250 USERID.PUTDEMO.TXT renamed to USERID.PUTDEMO2.TXT

Example 6: Getting a list of members of a PDS that is not a load library and renaming a member:

ftp> cd vps.exec
250 "USERID.VPS.EXEC" partitioned data set is working directory
ftp> *dir*
200 Port request OK.
125 List started OK

Name	VV.MM	Created	Changed	Size	Init	Mod	Id
MAILX	01.04	1998/07/20	1998/08/06 16:26	153	152	0	USERID
REPORT	01.39	2000/08/07	2001/11/08 13:40	92	19	0	USERID
REPORTN	01.36	2000/08/21	2000/08/22 13:06	87	84	0	USERID
REPORTO	01.33	2000/08/22	2000/08/22 13:07	84	84	0	USERID
RPTSOL	01.04	2001/10/24	2001/10/24 11:45	89	89	0	USERID
SYS2RPT	01.05	2002/04/08	2002/04/09 15:03	96	92	0	USERID
TEST	01.34	2000/08/21	2000/08/21 15:32	11	10	0	USERID
TEST2	01.00	2000/08/11	2000/08/11 12:17	6	6	0	USERID
VPSMLIST	01.00	2002/04/09	2002/04/09 11:41	21	21	0	USERID
WEEKLY	01.17	2000/08/22	2001/11/19 10:01	43	17	0	USERID

250 List completed successfully.
ftp: 788 bytes received in 0.03Seconds 25.42Kbytes/sec.
ftp> *rename test2 test3*
350 RNFR accepted. Please supply new name for RNTO.
250 USERID.VPS.EXEC(TEST2) renamed to USERID.VPS.EXEC(TEST3)

Example 7: Getting a list of members of a PDS that is a load library. **Note:** FTP considers any PDS with the RECFM=U to be a load library**.** Since WYLBUR edit format data sets are stored as RECFM=U, FTP displays them in the load library format.

ftp> cd tests
250-Local directory might be a load library
250 "USERID.TESTS" partitioned data set is working directory
ftp> *dir*
200 Port request OK.
125 List started OK

```
 Name      Size   TTR   Alias-of AC ------ Attributes ------- Amode Rmode
REPORT1    000000 000007             DC NX                     ANY  ANY
REPORT2    090000 00000B             DC NX                     ANY  24
REPORT3    0D0000 00000F             DC NX                     ANY  24
```

250 List completed successfully.
ftp: 324 bytes received in 0.00Seconds 324000.00Kbytes/sec.

Example 8: Changing the prefix and seeing the list of data sets within the directory

ftp> *pwd*
257 "'USERID.STATUS.'" is working directory.
ftp> *cd MARY*
250 "USERID.STATUS.MARY." is the working directory name prefix.
ftp> *dir*
200 Port request OK.
125 List started OK

```
Volume Unit   Referred   Ext Used Recfm Lrecl BlkSz Dsorg Dsname
DSP121 3390   2002/10/10  1    2  VB     256  6233  PS    ANNUAL
DSP114 3390   2002/10/10  1    4  VB     256  6233  PS    MONTHLY
DSP128 3390   2002/10/10  1   15  VB     256  6233  PS    YEARLY
```

250 List completed successfully.
ftp: 258 bytes received in 0.02Seconds 16.13Kbytes/sec.
ftp>

4 TN3270 FOR INTERACTIVE SESSIONS

You can establish interactive sessions to Titan via the network using a client that supports the TN3270 protocol. This protocol allows you to establish a full-screen interactive session with an appropriate host, such as Titan. See Section 2.1 for information about software available for establishing an interactive session with Titan. The host name for Titan interactive sessions is tn3270.titan.nih.gov.

When you establish a connection, you will see a terminal screen with the title "Application Selection." Enter the application you wish to access in the first field at the bottom of the screen and, optionally, your USERid in the second field. Choose the application NIHTSO for Titan. Press the enter key to go to the next screen. The following screen will prompt you for your RACF password and give you the opportunity to change your password. You will also be prompted for your USERid if you did not provide it on the first screen. After typing the information and pressing the enter key, you will see a menu of various tasks and applications. If you want to use WYLBUR, give the command

tso WYLBUR

on the terminal screen command line. Refer to the *Titan User's Guide* for additional information on establishing interactive sessions.

5 DATA SET CONVENTIONS AND OTHER IMPORTANT CONSIDERATIONS

Be sure to adhere to the standard conventions for storing and naming data sets. These standards include the following:

- Data set extensions must not exceed eight characters.
- All names must start with a valid Titan USERid or account (RACF group).
- Data set extensions must begin with a letter or a national character and may contain letters, nationals, and digits.
- All data sets must be cataloged.

See the *Titan User's Guide* for more information.

6 APPENDICES

Appendix A - Details on the NIH Titan SITE Command

SITE may be used for host-dependent FTP parameters.

Successive SITE commands are cumulative and remain in effect until changed. The minimum abbreviation for each parameter is shown in capital letters.

Syntax: SITE <SITE parameter>, ...

<SITE parameter> ::=
MGmtclass=<management class>
VOLume= <private volume name>
PRImary=<amount>
SECondary=<amount>
TRacks
CYlinders
BLocks
Dir= <blocks>
RECfm= <record format>
LRecl= <logical record length>
BLKsize= <max physical block>
TRAILingblanks
NOTRAILingblanks
FILEtype=JES
FILEtype=SEQ
DATAClass=<data_class>
ASAtrans
NOASAtrans

Notes:
(1) The SITE command verb is followed by a list of keyword parameters. Each keyword may be shortened as far as indicated by the capital letters.
(2) A single FTP command is limited to 80 characters. In the (unlikely) event that a SITE command exceeds 80 characters, it can be broken into two or more successive SITE commands.
(3) If an error is found in parsing a SITE parameter, the system generates an error message indicating the bad parameter. The faulty parameter and all following parameters will be ignored. The user must then re-enter the parameters.

Operands:

MGMTCLASS=<management class >

Specify the management class for the file that you will be transferring to Titan. Titan currently supports the following management classes: DISK2YR, DISK7YR, LONGTERM, NOBACKUP, and TEMP.[1]

VOLUME=<volser >

Specify the volume serial number on which the data set is to be created. Required only if the data set is to be written to a dedicated disk.

PRIMARY=<amount>
SECONDARY=<amount>

Specify the primary and secondary disk space allocation. These parameters set the primary and secondary space allocations in tracks, cylinders, or blocks. The default is tracks, but this may be changed using the CYLINDERS or BLOCKS parameter. Include the CYLINDERS parameter in the SITE command string if the space is to be allocated in cylinders. Use the BLOCKS parameter to allocate the space in blocks.

TRACKS

Allocate space in tracks. Track allocation is the default.

CYLINDERS

Allocate space in cylinders.

BLOCKS

Allocate space in blocks.

DIR=<blocks>

Specify an integer number of 256-byte blocks to be reserved for PDS directory. One block holds from 3 to 20 member entries. This parameter is required to create a new PDS.

RECFM=<record format>

Specify the record format of the file to be uploaded to Titan. Options include:

F	fixed
FB	fixed block
V	variable
VB	variable blocked
U	unformatted

[1] The SMS management class tells the system how to handle backups and automatic scratches. For more information about these management classes, see the discussion on the UNIT parameter in the *Titan Batch Processing* manual.

LRECL= <logical record length>

Specify the logical record length of the file.

BLKSIZE=<max physical block>

Specify the block size of the file.

Explicitly set the "DCB" or format attributes of a new data set. If the data set is being created, these parameters override the default data set attributes.

If the data set exists, these parameters must exactly match the corresponding attributes of the data set.

TRAILINGBLANKS

Include trailing blanks when downloading a RECFM=FB data set.

NOTRAILINGBLANKS

Strip trailing blanks when downloading a RECFM=FB data set. Specify TRAILINGBLANKS to revert.

FILETYPE=JES

Submit transferred files as batch jobs. If this parameter is used, the next files transferred to Titan are not stored, but instead are submitted as a JCL batch job. To resume regular file transfer, use FILETYPE=SEQ. Since WYLBUR RUN command parameters such as HOLD and NOPURGE are not available as subparameters to this command, users should be sure to include all appropriate control statements in their JCL file. After the FILETYPE=JES command is issued, the next file transferred must be transferred as an ASCII text file.

FILETYPE=SEQ

Submit transferred files as data sets. If this parameter is used, the next files transferred to Titan are stored as data sets. This is the default.

DATACLASS

Specify a data class for a new data set. The data classes are names predefined by the installation and have assigned DCD and SPACE parameter values.

ASATRANS

For use with downloading print format data sets (i.e., data sets containing a carriage control character in column 1). This option causes the carriage control character in each record to be excluded when downloaded. By default, the carriage control character is downloaded along with the rest of the record.

NOASATRANS

To include the carriage control character in the download after having specified ASATRANS.

Appendix B - Important Host Names and Addresses

Titan Services

These are the corresponding Internet addresses for the Internet host names listed in this manual. These addresses should only be needed in conjunction with the use of a firewall and are subject to change.

Host name	IP Address
FTP.TITAN.NIH.GOV	128.231.64.34
TN3270.TITAN.NIH.GOV	128.231.64.34

Name Servers

TCP/IP users at NIH should configure their networking to use the name servers in the following order:

	Name Server	IP Address
1	ns.nih.gov	128.231.128.251
2	ns2.nih.gov	128.231.64.1
3	lhc.nlm.nih.gov	130.14.35.128

By having backups for the name servers, TCP/IP network users at NIH can be assured of the most reliable service possible.

Appendix C - Glossary

3270 Telnet	A special form of Telnet that emulates the 327x line of IBM full-screen terminals.
address	The address of a computer is its unique location code on the Internet. Each host's address MUST be unique to itself. If I am sending information to someone else on the network, I need to know that person's address, and they need to know mine, as if we were sending letters back and forth. In fact, data sent over the Internet is sent in the form of a little electronic envelope called a packet.
client	A computer program that requests information from a remote partner. The partner is usually called a server. The client always initiates requests.
FTP	File Transfer Protocol. A set of predefined rules followed by two computers in order to exchange information across a TCP/IP network.
host	Any computer that runs a network program and allows individuals to log in and/or transfer files to and from it.
Internet	The Internet is just what its name states, an inter-network, or a network of smaller networks all using the TCP/IP protocol.
Job	A group of instructions designed to be executed on a computer.
name server	A computer out on the network that returns the address for a name sent to it. A computerized directory.
NIHnet	The NIH wide-area network, an integrated wide area network that connects local area networks, Titan, and the Internet.
packet	This is the heart of data transfer on the network. Files are broken up before transmission and then shipped out over the Internet in packets, which are decoded and reassembled at the other end.
protocol	A protocol is the agreed-upon conventions that two computers will use when conversing with each other. Two computers trying to communicate using different protocols, is like two people trying to carry on a conversation when one speaks just French and the other speaks only Japanese. It just won't work.
server	A computer program that waits—listening to the network for requests for service.

TCP/IP	Transmission Control Protocol/Internet Protocol. This is one of the most common network protocols, and the one discussed herein. TCP/IP is a useful and versatile protocol, designed as a standard that allows different types of computers, from large central servers to desktop computers to talk to and understand each other.
Telnet	A protocol designed to allow an interactive session to be carried out over a TCP/IP network.

INDEX

Network Access to the Titan System

Document Evaluation

Is the Manual:

	YES	NO
Clear?	☐	☐
Well organized?	☐	☐
Complete?	☐	☐
Accurate?	☐	☐
Suitable for the beginner?	☐	☐
Suitable for the advanced user?	☐	☐

Comments:

_____
_____
_____
_____
_____
_____
_____

Please give page references where appropriate. If you wish a reply, include your name and mailing address.

Send to: National Institutes of Health
Center for Information Technology
NIH Computer Center
Building 12A, Room 4011
12 South Drive MSC 5607
Bethesda, MD 20892-5607

FAX to: (301) 496-6905

IC or Agency:
Date Submitted:
Name (Optional):
E-mail Address: